



Docket No.: 57454-279

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 20277
	:	
Hiromitsu SUGIMOTO, et al.	:	Confirmation Number: 7560
	:	
Serial No.: 09/987,893	:	Group Art Unit: 2829 ✓
	:	
Filed: November 16, 2001	:	Examiner: Nguyen, Tung X
	:	
For: SUBSTRATE TESTING APPARATUS AND SUBSTRATE TESTING METHOD	:	

**TRANSMITTAL OF APPEAL BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Submitted herewith in triplicate is Appellant(s) Appeal Brief in support of the Notice of Appeal filed September 8, 2003. Please charge the Appeal Brief fee of \$330.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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**Date: November 3, 2003**



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**APPEAL BRIEF**

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P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed September 8, 2003.

**I. REAL PARTY IN INTEREST**

The real parties in interest in this application are the assignees, Mitsubishi Denki Kabushiki Kaisha and Ryoden Semiconductor System Engineering Corporation.

**II. RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any related Appeal or Interference.

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### III. STATUS OF CLAIMS

Pending claims 2, 3, 4 and 7 stand twice rejected and are subject to this Appeal.

### IV. STATUS OF AMENDMENTS

An Amendment pursuant to 37 C.F.R. §1.116 was filed on July 1, 2003. In the Advisory action dated July 30, 2003, the Examiner indicated that for the purposes of Appeal, the proposed amendment would be entered. The Amendment pursuant to 37 C.F.R. §1.116 recast claims 5 and 6 in independent form to include the limitations of base claim 2 and intervening claim 4. The Advisory action dated July 30, 2003 indicated that claims 5 and 6 were allowed and are therefore not subject to this Appeal.

### V. SUMMARY OF INVENTION

The present invention relates to a substrate testing apparatus and a substrate testing method for testing the surface of a semiconductor wafer or the like (page 1 of the specification, lines 5 through 7). The present invention provides a substrate testing apparatus and a substrate testing method capable of performing a collective testing over a wide area of the substrate surface even under different temperature environments by adjusting the interval between the probing needles in accordance with the expansion/contraction of the substrate such as a semiconductor wafer (page 2 of the specification, lines 7 through 12).

By adopting this construction, one can suitably change the relative positional relationship of the probing needles by moving the plurality of probe units all at a time along the rails even if the measurement is to be conducted at plural sites (page 3 of the specification, lines 5 through 8).

Therefore, a substrate testing apparatus can be provided that can accord with the change of abutment points due to expansion/contraction of the substrate (page 3 of the specification, lines 8 through 10).

By adopting testing method, one can test the substrate without bringing the probing needles into contact with the parts of the substrate subjected to measurement where the probing needles should not be brought into contact (page 5 of the specification, lines 2 through 5). This eliminates the fear of undesirably damaging the substrate with the probing needles (page 5 of the specification, lines 5 through 6). Since the interval of the probe units can be freely changed along the rails, one can easily accord with the change in the arrangement of circuit patterns or the like subjected to measurement (page 5 of the specification, lines 5 through 8).

## VI. ISSUE

### A. The Rejection

Claims 2-4 and 7 were rejected under 35 U.S.C. § 102(e) as being anticipated by Root (U.S. Pat. No. 6,201,402).

### B. The Issue

**The Issue Which Arises In This Appeal and Requires Resolution by the Honorable Board of Patent Appeals and Interferences (the Board) is:**

Whether claims 2, 3, 4 and 7 are unpatentable under 35 U.S.C. §102(e) for lack of novelty predicated upon Root.

## VII. GROUPING OF CLAIMS

The appealed claims stand or fall together as a group.

## VIII. THE ARGUMENT

### A. The Examiner's Position

The Examiner referenced Root at drawing figures 1a-1d and asserted that the reference discloses the apparatus of claims 2-4 and the testing method of claim 7. See page 2 of the Office action dated April 8, 2003. The Examiner stated that it appears that Root, at col. 1, lines 49-62, discloses that the plurality of probe units may be moved concurrently in X and Y directions, or alternatively, each probe may be moved independently. See page 4 of the Office action dated April 8, 2003.

In the Advisory Action dated July 30, 2003, the Examiner reiterated the same position and stated that Root, at col. 1, lines 49-62, discloses a plurality of probe units configured in a flat three by three matrix and are held in place by a probing platform. The Examiner argued that the plurality of probe units will be moved concurrently in X and Y directions, or alternatively, each probe unit may be moved independently.

### B. Appellants' Position

Claim 2 is directed to a substrate testing apparatus including a first rail group made of a plurality of rails disposed in parallel with each other, a second rail group made of a plurality of rails disposed in parallel with each other in a direction that crosses the first rail group. A plurality of probe units are disposed to cover respective intersections of the rails included in the first rail group and the

rails included in the second rail group, wherein all of the probe units are **concurrently** movable along the rails included in the first rail group and the second rail group. Corresponding interval maintaining means are present for keeping each rail included in the first rail group at an interval corresponding to an arrangement of locations to be measured on a substrate subjected to measurement. The plurality of probe units each include a probing needle to be brought into contact with a surface of the substrate.

Claim 7 is directed to a substrate testing method that uses a plurality of probe units disposed to cover respective intersections of rails included in a first rail group made of a plurality of rails disposed in parallel with each other and rails included in a second rail group made of a plurality of rails disposed in parallel with each other in a direction that crosses the first rail group. The plurality of probe units are movable along the rails included in the first rail group and the second rail group, and each including a probing needle to be brought into contact with a surface of a substrate subjected to measurement. The probing needles are brought into contact with the substrate in a state in which an arrangement of the plurality of probe units are **concurrently** adjusted so that an interval between the probing needles corresponds to an arrangement of locations to be measured on the substrate.

Claim 2 of the present invention, describes in pertinent part, that all of said probe units are concurrently (i.e. all at a time) movable along the rails included in the first rail group and the second rail group. Similarly, claim 7 recites, in pertinent part, that the plurality of probe units are concurrently adjusted. Appellants submit that Root is not capable of concurrently moving or adjusting a plurality of probing units along the rails, since as stated above, each tile is moved independently in a X and Y direction with the control knobs 108 and 107.

It appears that the Examiner relied on the single phrase, "may be moved", as evidence that the plurality of probe units are capable of moving concurrently in X and Y directions, or alternatively, each probe may be moved independently. However, Appellants respectfully, but strenuously, disagree with

the Examiner's interpretation of the reference.

Root discloses at col. 1, lines 49-62, that each tile is moved independently in an X and Y direction with the control knobs 108 and 107. This portion of the reference upon which the Examiner relies, discloses the following:

The present invention provides a system and method for a plurality of probe titles and a probe platform for electrically probing a semiconductor wafer over a broad area of the semiconductor wafer. Nine ceramic tiles are configured in a flat three by three matrix, and are held in place by a probing platform. Each tile may be moved independently in an X and Y direction. The probe platform has three control knobs on the side to move a tile in the X direction and three control knobs on the front to move a tile in the Y direction. The control knobs are attached to transmission shafts which slide back and forth into three ball detent positions. The ball detent positions determine which tile is engaged and can be manipulated. The ceramic tiles hold self-aligning tungsten probe tips to permit semiconductor wafer testing over a wide temperature range.

The Honorable Board's attention is invited to the control knobs 107, 108 of Root, depicted in Figure 1A. As stated at col. 1, lines 49-62, Root discloses that the probe platform has three control knobs on the side to move a tile in the X direction and three control knobs on the front to move a tile in the Y direction. The control knobs are attached to transmission shafts which slide back and forth into three ball detent positions. The ball detent positions determine which tile is engaged and can be manipulated. Moreover, at col. 3, lines 19-31, Root further defines the control knob structure as follows:

A front transmission shaft 109 or a side transmission shaft 111 is connected to three gears 101. The front transmission shaft 109 or the side transmission shaft 111 transmits rotational power to the connected gears 101. Each round front control knob 107 and front transmission shaft 109 or each round side control knob 108 and side transmission shaft 111 is connected to a round detent strike 123. **The detent strike 123, together with a ball plunger 135, permits the user to engage only one gear at a time by sliding it back and forth in three detent positions 102.** A gear 101 is connected to a front transmission shaft 109 or a side transmission shaft 111. The gear transmits rotational input from the front transmission shaft 109 or the side transmission shaft 111 to a stub shaft gear 103 (emphasis added).



Thus, Root's ball detent positioning mechanism prevents the user from moving all of the probe units concurrently along the rails, since the user must select from one of the three available ball detent positions, and as stated above, the ball detent position determines which tile (singular) is engaged and manipulated.

Accordingly, Root fails to disclose every limitation of the substrate testing apparatus of independent claim 2 and the substrate testing method of claim 7 and, therefore, the rejection of claims 2 through 4 and 7 under 35 U.S.C. § 102(e) is not legally viable. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984).

## IX. CONCLUSION

Based upon the foregoing, Appellants submit that the Examiner has not established a prima facie basis to deny patentability to the claimed inventions under 35 U.S.C. § 102 for the reasons set forth *supra*. Appellants submit that the Examiner's rejection under 35 U.S.C. § 102 is factually and legally erroneous. Appellants, therefore, solicit the Honorable Board to reverse the Examiner's rejection under 35 U.S.C. § 102.

09/987,893

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,  
MCDERMOTT, WILL & EMERY

A handwritten signature in cursive script, appearing to read "Brian K. Seidleck".

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X. APPENDIX

2. A substrate testing apparatus comprising:

a first rail group made of a plurality of rails disposed in parallel with each other;

a second rail group made of a plurality of rails disposed in parallel with each other in a direction that crosses said first rail group;

a plurality of probe units disposed to cover respective intersections of the rails included in said first rail group and the rails included in said second rail group, all of said probe units being concurrently movable along the rails included in said first rail group and said second rail group; and

corresponding interval maintaining means for keeping each rail included in said first rail group at an interval corresponding to an arrangement of locations to be measured on a substrate subjected to measurement,

wherein said plurality of probe units each comprise a probing needle to be brought into contact with a surface of said substrate.

3. The substrate testing apparatus according to claim 2, wherein said corresponding interval maintaining means maintains the interval after changing the interval every time the arrangement of the locations to be measured changes.

4. The substrate testing apparatus according to claim 2, wherein said corresponding interval maintaining means comprises equal interval maintaining means for keeping each rail included in said first rail group at an equal interval.

7. A substrate testing method using a plurality of probe units disposed to cover respective intersections of rails included in a first rail group made of a plurality of rails disposed in parallel with each other and rails included in a second rail group made of a plurality of rails disposed in parallel with each other in a direction that crosses said first rail group, said plurality of probe units being movable along the rails included in said first rail group and said second rail group and each comprising a probing needle to be brought into contact with a surface of a substrate subjected to measurement, wherein said probing needles are brought into contact with said substrate in a state in which an arrangement of said plurality of probe units is concurrently adjusted so that an interval between said probing needles corresponds to an arrangement of locations to be measured on said substrate.